



GRADE 11 EXAMINATION  
NOVEMBER 2007

**LIFE SCIENCES: PAPER II**

**MARKING GUIDELINES**

Time: 2½ hours

150 marks

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**The marking guide is a working document prepared for use by teachers as they assess the Grade 11 externally set examinations.**

**There may be different interpretations of the marking guidelines but the teacher should keep as closely as possible to the suggested way of assessing. When in doubt, a teacher should check with another member of the cluster or with the relevant Assessment Specialist.**

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**SECTION A**

Answer all the questions from this section in the spaces provided in this booklet.

**QUESTION 1**

- 1.1 Match the description in List X to the term in List Y, by writing the letter of the answer in the space provided.

**DESCRIPTION****TERM**

- |       |  |                        |
|-------|--|------------------------|
| [ G ] | The number of individuals that the environment can support without becoming degraded.                              | A. Population          |
| [ B ] | The struggle for existence between members of a community caused by the limited supply of an essential resource.   | B. Competition         |
| [ E ] | Green plants that make food by photosynthesis.   | C. Density-independent |
| [ J ] | The type of competition between members of different species.  | D. Natality            |
| [ D ] | Measure of the number of new individuals produced by a population during a certain length of time.                 | E. Producers           |
| [ A ] | Group of individuals of the same species living in a particular area at the same time.                             | F. Intra-specific      |
| [ I ] | Factors that affect the size of a population and which depend on the population density.                           | G. Carrying capacity   |
| [ F ] | The type of competition between members of the same species.   | H. Gross production    |
| [ H ] | The total amount of energy trapped in plants during photosynthesis.  | I. Density-dependent   |
| [ C ] | Factors of the environment that affect the size of a population and which do not depend on the population density. | J. Inter-specific      |

**[10]**

1.2

Factor being compared	Graph A	Graph B
1. J-shaped graph shown	No ✓	Yes ✓
2. Graph shows growth of a K-strategy species	Yes ✓	No ✓
3. Graph shows population growth with a decelerating phase	Yes ✓	No ✓
4. Graph has a lag phase	Yes ✓	Yes ✓
5. Population reaches carrying capacity	Yes ✓	No ✓
6. Population growth is affected by environmental resistance	Yes ✓	No ✓
7. Graph shows population density	No ✓	No ✓
8. Graph shows human population growth for the last 100 years	No ✓	Yes ✓
9. Graph has an equilibrium phase	Yes ✓	No ✓
10. Name of this type of population growth form	Logistic ✓	Exponential/ geometric/ Logarithmic ✓

[20]

1.3 Choose the correct answer for each of the following multiple choice questions. Write the letter of your choice in the appropriate box below.

Question	1.3.1	1.3.2	1.3.3	1.3.4	1.3.5	1.3.6	1.3.7	1.3.8	1.3.9	1.3.10
Answer	C	D	A	B	D	D	A	B	C	A
	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓

10 × 2 [20]

**50 marks**

**Total for Section A: 50 marks**

**SECTION B**

**QUESTION 2**

- 2.1 2.1.1 cat ✓  
2.1.2 petrel ✓, rats ✓ (3)
- 2.2 There are many of them ✓  
They live in the same area ✓  
They interbreed ✓ (3)
- 2.3 Joins all the plotted points ✓, line graph ✓ (on page vi of SECTION A) (2)
- 2.4 D – disease: ✓                      S – shooting: ✓                      T – trapping: ✓  
at 1977                                      at 1986                                      at 1996 (3)
- 2.5 (3)
- 2.6 By recording how many cats they saw ✓; direct count ✓ (2)
- 2.7 All three activities were necessary to eliminate the cats. Disease on its own had some effect; shooting helped to further reduce the cat numbers but trapping was also necessary to completely eradicate the cats. (4)

Marks	Performance criteria
4	Explains that all 3 activities were required, mentioning the relative success of each
3	Explains that 2 activities were required, mention relative success of each
2	Explains that 1 activity was required, mention its relative success
1	Names one/two/three activities, no explanation given

**[20]**

**QUESTION 3**

- 3.1 Today there is a greater number ✓ and variety ✓ of industries than 30 years ago. (2)
- 3.2 30 years ago there was little industry ✓ and therefore little pollution ✓. Today, there is much more pollution ✓, having come from the increased industry ✓. (4)
- 3.3 The area of indigenous vegetation today is much less than 30 years ago ✓. With low-income housing having been established on the area of indigenous plants, many plants would have been destroyed ✓, reducing the number that could be used for medicinal ✓ and cultural and other purposes. (3)

3.4 *Housing area to be named + 3 reasons should be given*

House area ✓: services such as water ✓, sewage disposal ✓, electricity ✓, roads ✓, transport ✓, etc. are provided (*3 reasons must be given*)

**OR**

Shack area ✓ there is little pollution ✓ from the factories because the area is out ✓ of direct wind-blown pollution ✓; this is the only affordable area ✓, one could "live off the land" by collecting wattle wood ✓ (*3 reasons must be given*) (4)

3.5 B ✓ (1)

3.6 A ✓ (1)

3.7 How long have you lived in the area? ✓  
Where is your house in the low-income area? ✓  
Which factory blows smoke onto your house?  
Do you suffer any chest problems? ✓  
How many people are suffering chest problems? ✓, etc.

*The question must be linked to any aspect of air pollution produced by the factories or any other source in areas west of the low-income housing area.*

Heading for list is given ✓  
e.g. How air pollution affects me  
Answers are in question format ✓

(5)  
**[20]**

**QUESTION 4**

4.1 It lies between Jinja and Kampala ✓ in Uganda ✓ (2)

4.2 Trees have been cut down to provide land for agriculture (✓)  
Trees have been cut down for illegal saw mill operations (✓)  
Illegal logging has been done ✓  
Reference to politicians' companies also acceptable  
*1 mark for each answer* (3)

4.3 Model answer:  
 $51 \text{ ha} / 7\ 000 \text{ ha} \times 100 = 7,3\%$  ✓  
*Pupil must show working; whatever its nature the marker must be able to follow it* (4)

4.4 Water cycle will be negatively affected ✓  
With trees cut down, transpiration/evaporation will be reduced ✓  
There will be little condensation, therefore little cloud formation ✓  
resulting in lowered rainfall ✓ (4)

- 4.5 Model answer:  
 Nitrates are used as crop fertilisers  
 ↓  
 Soil with nitrates washes into rivers feeding into Lake Victoria  
 ↓  
 Nitrates cause surface algae to grow and cover water surface  
 ↓  
 Algae die, decomposition uses up oxygen in water  
 ↓  
 Fish die and numbers drop (7)

**OR**

- Nitrates are used as crop fertilisers  
 ↓  
 Soil with nitrates washes into rivers feeding into Lake Victoria  
 ↓  
 Nitrates cause surface algae to grow and cover water surface  
 ↓  
 Water plants get no light so cannot photosynthesise  
 ↓  
 Little/no plant food available for fish  
 ↓  
 Fish die and numbers drop

*Assessment:*

- statements written in point form* 1/0  
*statements are separated by arrows* 1/0  
*statements are in logical order* 1/0  
*statements are explanatory* 4/3/2/1/0

Note: Flow chart does not have to be vertical as shown above

[20]

**QUESTION 5**

- 5.1 5.1.1 Zebra, wildebeest, buck, etc. herbivore ✓ (1)
- 5.1.2 In the wet season ✓, hyenas feed as scavengers ✓ on prey caught by lions  
 In the dry season ✓, they become predators ✓ on small animals (4)
- 5.1.3 The dominant females are easily able to get a mate, therefore can reproduce ✓. They are able to get more food ✓ than subordinate females, so their offspring have very good chances of surviving to maturity ✓ (3)
- 5.2 5.2.1 Independent variable: fanning periods per hour ✓  
 Dependent variable: hatching success ✓ (2)
- 5.2.2 As the number of fanning periods per hour ✓ increases ✓ so does the hatching success ✓  
 Note: Unit needs to be mentioned for candidate to get 3 marks (3)
- 5.2.3 For best success rate, there should be a low fanning bout duration ✓✓, and it should be of high fanning bout frequency ✓✓ (4)

- 5.2.4 (a) Using sight ✓ (accept using touch by pressure of water) (1)
- (b) Sight is possible the best sense to use in water ✓ as others may not be able to be "transmitted" easily ✓ (2)  
OR  
touch or pressure from water movement is possible because fish have a lateral line system that can detect pressure changes from the fanning in the water ✓✓

**[20]**

**SECTION C**

In this section, you are required to provide a piece of extended writing. You must give an opinion and as many reasons as possible for your opinion. You will be assessed on the structure of your argument as well as on the way in which you communicate your ideas.

**QUESTION 6**

The question is based on the text about the newspaper article, headed

"The fatal cost of greed and wanton destruction of ancient forests" which is on page 6 and 7 of SECTION B.

Do you think that the Ugandan President's cabinet made an ethical (correct) decision to allow one-quarter of the Mabira Forest to be chopped down and used for sugar plantations? Justify your opinion.

Criteria	Marks		
	3	2	1
Scientific arguments	At least three reasons given using information from the text	Two reasons given using information from the text	One reason given using information from the text
Social arguments	At least three reasons given using information from the text	Two reasons given using information from the text	One reason given using information from the text
Cultural arguments	At least three reasons given using information from the text	Two reasons given using information from the text	One reason given using information from the text
Economic arguments	At least three reasons given	Two reasons given	One reason given
Synthesis	Answers demonstrate insight into and understanding of question. Arguments are set out logically	Some gaps in the logic and flow of answer	Attempted but with significant gaps in the logic and flow of answer
Layout, presentation, grammar	Essay is set out in paragraphs, essay is grammatically correct, work is legible	Most criteria are met	Very few criteria are met
Structure of argument	X	Opinion about ethics clearly stated	Opinion poorly stated or no opinion given

**[20]**

**Total: 100 marks**